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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

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GROUP 3600

Application Number: 09/615,021
Filing Date: July 13, 2000
Appellant(s): PHILLIPS ET AL.

Joseph G. Swan (Reg. No. 41,338)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on January 24, 2006, and Supplemental appeal brief filed on September 5, 2007 appealing from the Office action mailed November 16, 2004.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

3,270,310	LAMBERT	8-1996
6,125,355	BEKAERT et al	9-2000
6,405,179	REBANE	6-2002

6,144,945	GARG et al	11-2000
6,532,249	GOERTZEL et al	3-2003

Makridakis et al "Forecasting - Methods and Applications" John Wiley & Sons, Third Edition 1998, pp 211-227, 241-260 and 433-439

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

9 (a). Claims 1, 2, 6, 7, 14, 37 and 39 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Lambert (US 3,270,310)

With reference to Claims 1, 2, 6, 7, 14, 37 and 39, Lambert teaches a method, an apparatus and a computer-readable medium respectively, for evaluating an asset, said method comprising: using at least one computer to: (a) process historical data for value of an asset and historical data values for plural exogenous variables to obtain a formula for calculating a measure of a tendency of the value of the asset to change as a result of changes in the data values for the exogenous variables, wherein said formula is a function of the exogenous variables(See Lambert Column 1 line 9 - Column 2 line 9 and claim 1); (b) input projected data values for the exogenous variables (See Lambert Column 1 line 9 - Column 2 line 9 and claim 1); and (c) estimate a measure of the tendency of the value of the asset to change based on a change in at least one of the exogenous variables using the formula obtained in step (a) and the projected data values input in step (b), wherein the asset can be purchased by an owner, and wherein the value, whose tendency to change is estimated in step (c), fluctuates without further investment by the owner (See Lambert Column 1 line 9 - Column 2 line 9 and claim 1). A computer-readable medium is inherent in the computer of Lambert and the stock prices are interpreted to include market price of the asset.

9 (b). Claims 3-5, 12-13 and 21, are rejected under 35 U.S.C. 103(a) as being unpatentable over Lambert (US 3,270,310) in view of Bekaert et al (US Patent 6125355).

With reference to Claims 3-5, Lambert teaches a method of claim 1 as discussed above. Lambert fails to teach the steps wherein said asset comprises a portfolio of shares of stock in plural different corporations, an index or a mutual fund.

Bekaert teaches the steps wherein the asset comprises a mutual fund. (See Bekaert Column 3 lines 43-46). Mutual funds are interpreted to include a portfolio of shares and also an index, as in the case of an index fund.

Both Lambert and Bekaert are concerned with predicting the future price of an asset like common stock. It would have been obvious to one with ordinary skill in the art at the time of invention to include the disclosures of Bekaert to the teaching of Lambert. The combination of the disclosures taken as a whole suggests that it would help the user to predict the future price of other assets also.

With reference to Claim 12, Bekaert teaches a method of claim 7 wherein said price formula describes a logarithm of the value of said asset as a function of logarithms of said exogenous variables. (See Bekaert Column 11 lines 3-6)

With reference to Claim 13, Bekaert teaches a method of claim 1 wherein step (b) comprises obtaining current values for said exogenous variables and allowing a user to alter plural of said current values to produce a "what if scenario, and wherein data values for said "what if scenario are used as said projected data values for the exogenous variables. (See Bekaert Column 4 lines 45-50)

With reference to Claim 21, Bekaert teaches a method of claim 1 further comprising the steps of repeating steps (a) through (c) for plural different assets and selecting a subset of said plural assets based on measure estimated in step (c). (See Bekaert Column 4 lines 17-23) Determination of one or more optimal portfolios is interpreted to include the step of selecting a subset and steps of repeating (a) through (c) for plural different assets are inherent in the method of Bekaert.

9 (c). Claims 8, 9, 15-18, and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lambert (US 3,270,310) in view of Makridakis (Reference V).

With reference to Claims 8, 9 and 23-26, Lambert teaches a method of claims 1 and 7 as discussed above.

Lambert fails to teach the steps wherein said price formula is obtained by performing a non-linear regression or neural network processing.

Makridakis teaches the step of using non-linear regression or neural network processing for estimating a formula. (See Makridakis pages 433-439). The examples used by Makridakis are to illustrate the principles of the multivariate technique that is discussed and hence the applications of those principles are not limited to those examples per se.

Both Lambert and Makridakis are concerned with using multivariate analysis for predicting the value of a dependent variable. It would have been obvious to one with ordinary skill in the art at the time of invention to include the disclosures of Makridakis to the teaching of Lambert. The combination of the disclosures taken as a whole suggests that it would help the user to predict the future price of common stock using a multivariate analysis that is appropriate for the situation.

With reference to Claims 15 and 16, Makridakis teaches the step wherein said tendency of the value of the asset to change based on the change in said at least one of the exogenous variables is a measure of elasticity or sensitivity of the value of the asset to said at least one of the exogenous variables (See Makridakis pages 211-227, 241-260 and 433-439). Regression coefficients of a log-transformed function represent elasticity measures. It would have been obvious to one with ordinary skill in the art at the time of the current invention to combine the disclosures of Makridakis to the teaching of Lambert. The combination of the disclosures taken as a whole suggests that users would have benefited from the further insights that these statistics provide about the estimated model. The combination also suggests the neural networks would help the user save time, money and make the estimating process more accurate and efficient.

With reference to Claims 17 and 18, Makridakis teaches the step of determining the reliability of the estimated model and the step of performing Student's t-test. (See Makridakis pages 211-227) It would have been obvious to one with ordinary skill in the art at the time of the current invention to combine the disclosures of Makridakis to the teaching of Lambert. The combination of the disclosures taken as a whole suggests that users would have benefited from getting a measure of reliability of the estimated model and allowed them to choose alternative models that provide better reliability.

With reference to Claim 22, Makridakis teaches the step of determining the reliability of the estimated models (See Makridakis pages 211-227 and 241-260). One purpose of estimating reliability is to use the models that are reliable in making selections. Hence selecting a subset of assets based on the reliability of the models is a teaching inherent in the disclosure of Makridakis. It would have been obvious to one with ordinary skill in the art at the time of the current invention

to combine the disclosures of Makridakis to the teaching of Lambert. The combination of the disclosures taken as a whole suggests that users would have benefited from getting a measure of reliability of the estimated model and allowed them to choose alternative subsets of assets that have greater reliability.

9 (d). Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lambert (US 3,270,310) in view of Rebane (US Patent 6,405,179 B1)

With reference to Claim 10, Lambert teaches a method of claim 7 as discussed above.

Lambert fails to explicitly teach the step wherein said formula is in a format of a truncated Taylor series expansion.

Rebane teaches the step of using a truncated Taylor series expansion to estimate a formula (See Rebane Column 7 lines 28-30) Truncation helps in reducing the number of terms to be estimated and there are benefits in the form of cost and time-savings.

It would have been obvious to one with ordinary skill in the art at the time of the current invention to combine the step of using a truncated Taylor series expansion to estimate the formula to the invention of Lambert. The combination of the disclosures taken as a whole suggests that users would have benefited from the cost and time savings as a result of the truncation.

9 (e). Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lambert (US 3,270,310) in view of Rebane (US Patent 6,405,179 B1) and further in view of Garg et al (US Patent 6,144,945).

With reference to Claim 11, Lambert and Rebane combined teach a method of claim 10 as discussed above.

Lambert and Rebane combined fail to explicitly teach the step wherein said formula is in a format of a truncated Maclaurin series expansion.

Garg teaches the step of using a truncated Maclaurin series expansion to estimate a formula (See Garg Column 11 line 14 - Column -12 line 6) Truncation helps in reducing the number of terms to be estimated and there are benefits in the form of cost and time-savings.

It would have been obvious to one with ordinary skill in the art at the time of the current invention to combine the step of using a truncated Maclaurin series expansion to estimate the formula to the invention of Lambert. The combination of the disclosures taken as a whole suggests that users would have benefited from the cost and time savings as a result of the truncation.

9 (f). Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lambert (US 3,270,310) in view of Goertzel et al (US Patent 6,532,449 B1).

With reference to Claim 27, Lambert teaches a method of claim 1 as discussed above.

Lambert fails to explicitly teach the step of using a genetic algorithm to obtain a formula.

Goertzel teaches the step of using a genetic algorithm to obtain a formula. (See Goertzel Column 1 lines 51-62, Column 3 lines 12-24, Column 5 line 66 - Column 6 line 27). A genetic algorithm is useful in predicting a future value or direction of a numerical time series using a non-numerical time series.

It would have been obvious to one with ordinary skill in the art at the time of the current invention to combine the disclosures of Goertzel to the invention of Lambert. The combination of the disclosures taken as a whole suggests that users would have benefited from

predicting a future value or direction of a numerical time series such as asset pricing using a non-numerical time series.

9 (g). Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lambert (US 3,270,310) in view of Ray et al (US Patent 6,018,722)

With reference to Claims 19 and 20, Lambert teaches a method of claim 1 as discussed above.

Lambert fails to explicitly teach the steps of initiating at least one of a purchase of said asset and a sale of said asset, and initiating at least one of a purchase of another asset and a sale of said other asset based on the estimate made in step (c).

Ray et al teaches the steps of initiating a purchase or sale of any security based on the recommendation of an expert system. (See Ray claims 1, 5 and 7).

It would have been obvious to one with ordinary skill in the art at the time of the current invention to combine the steps taught by Ray to the invention of Lambert. The combination of the disclosures taken as a whole suggests that users would have benefited from a timely follow up on the recommendation based on the estimate made in step (c). Timely follow up would also make the process more efficient.

(10) Response to Argument

In response to Appellant's summary of claimed subject matter, the examiner would like to point out that the applicant's invention is nothing more than an application of multivariate analytical techniques to asset valuation. Such applications to security valuation have been old and well known for more than two decades. Valuation models like Capital asset pricing model

(CAPM), arbitrage pricing model (APM), which can be found in Basic Investment textbooks, are examples of these applications.

In response to Appellant's argument about claims 1, 37 and 39 that the Lambert reference fails to show certain features of applicant's invention, the examiner respectfully disagrees. In particular the examiner completely disagrees with the Appellant's assertion that Lambert does not disclose "estimating a measure of the tendency of the value of the asset to change based on a change in at least one of the exogenous variables using an obtained formula and projected data values for the exogenous variables, where the formula has been obtained based on historical data for value of an asset and historical data values for the exogenous variables". In Column 1 lines 29-35 Lambert discloses deriving a formula based on historical data for value of an asset and historical data values for the exogenous variables (Lambert Column 1 lines 20-24 and 40-45). Lambert also discloses estimating future prices which are estimates of measure of the tendency of the value of the asset to change based on a change in at least one of the exogenous variables using an obtained formula and projected data values for the exogenous variables (Lambert Column 1 lines 42-46). The high price of the stock is one estimate and the low price is another estimate.

In response to Appellant's argument that Lambert says nothing at all about obtaining any formula for calculating a measure of the tendency of the value of the asset to change as a result of changes in data values of certain exogenous variables the examiner completely disagrees. One of ordinary skill in the art would understand that the formula estimated in Lambert (Column 1 lines 31-35) is the formula for calculating a measure of the tendency of the value of the asset to change as a result of changes in data values of certain exogenous variables. Appellant's arguments that

generation of a price estimate is a simple weighted combination of certain variables is based on an improper characterization of Lambert's disclosure. The coefficients of the Lambert's model are not constants but "stationery parameters" based on minimizing the error of the model to the past data. One of ordinary skill in the art would understand that in multivariate techniques like multiple regression, coefficients of the regression model are derived based on minimizing errors (for example the least squared error). The coefficients in Lambert's model vary from one stock to the other and hence are by no means a constant. If they were constants there would be no need to estimate the formula for each stock based on past values of the exogenous variables. Since the values of the coefficients change from one stock to the other and the formula is based on exogenous variables, the formula is itself a function of the exogenous variables. In other words, for identical projected values of the exogenous variables the estimate of future prices will be different for different stocks. Appellant's assertion that Lambert does not say anything at all about using a formula together with projected values for exogenous variables, to estimate a measure of the tendency of the value of the asset to change based on a change in at least one of the exogenous variables is incorrect because Lambert in Column 1 lines 40-46 discloses this feature. In short as discussed above Lambert discloses all the features including obtaining a formula for calculating a measure of a tendency of the value of the asset to change as a result of changes in the data values for the exogenous variables, wherein said formula is a function of the exogenous variables and using a formula together with projected values for exogenous variables, to estimate a measure of the tendency of the value of the asset to change based on a change in at least one of the exogenous variables.

In response to Appellant's argument about claim 7 that Lambert fails to show the step of calculating a price formula that describes the value of said asset as a function of said exogenous variables and then estimating a derivative of said price formula to obtain said formula, the examiner respectfully disagrees. The step of calculating a price formula that describes the value of said asset as a function of said exogenous variables has already been discussed above. One of ordinary skill in the art would understand that the partial derivative of the dependent variable with respect to an exogenous variable gives the coefficient for that variable. The whole concept of linear multiple regression is based on this principle and this inherency in Lambert would have been understood by one of ordinary skill in the art.

In response to Appellant's argument about claim 14 that Lambert fails to show the step of estimating tendency of the value of the asset to change based on a change in at least one of the exogenous variables, using different projected data values for the exogenous variables, the examiner respectfully disagrees. In Column 1 lines 40-46 and 60-64 Lambert discloses estimating a likely high price and a low price for the stock using the same formula and estimated range of the variables for the coming year. First of all a range of variables implies different projected data values for the exogenous variables. Secondly to obtain estimates of a high price and a low price at least some projected data values for the exogenous variables must be different.

In response to Appellant's argument about claim 21 that Bekaert fails to show the steps of repeating steps (a) through (c) in claim 1 for plural different assets; and selecting a subset of said plural different assets based on the measure estimated for each of said plural different assets in step (c), the examiner respectfully disagrees. First of all Bekaert discloses the steps

(a) through (c) in claim 1 for plural different assets (Bekaert Column 4 lines 1-9, 24-30, 35-44 and Column 5 lines 40-45). The pricing module in Bekaert performs these steps. The intermediary step of generating a formula for generating a future price is inherent in the disclosure of Bekaert. The simulation module in Bekaert uses the output of the pricing module to determine one or more optimal portfolios (Bekaert Column 17-23). One of ordinary skill in the art of Finance and Investments would understand that determining a portfolio implies selection of a subset of a plurality of different assets. Since the portfolio determination is based on the output of the pricing module, the selection of a subset of said plural different assets is based on the measure estimated for each of said plural different assets in step (c) of claim 1. Hence Bekaert teaches all the features of claim 21.

In response to Appellant's argument about claim 17 that there is no motivation to combine Makridakis's teachings to the disclosure of Lambert, the examiner respectfully disagrees. The discussions above clearly show that Lambert does disclose generating a formula for calculating a measure of a tendency of the value of the asset to change as a result of changes in the data values for the exogenous variables. However once the formula is generated one would like to know how reliable the formula is in predicting values of the price of the asset. This is a standard check that is done by those who use regression models and this would have been obvious to one of ordinary skill in the art. Makridakis teaches the step of determining reliability of the estimated model. Both Lambert and Makridakis are concerned with providing the user of a regression model with reliable estimates. Hence it would have been obvious to one with ordinary skill in the art at the time of the current invention to combine the disclosures of Makridakis to the teaching of Lambert. The combination of the disclosures taken as a whole suggests that users would have benefited from

getting a measure of reliability of the estimated model and allowed them to choose alternative models that provide better reliability.

For the above reasons, it is believed that the rejections should be sustained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

N. Sub

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November 28, 2007

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